



1

SEQUENCE LISTING

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PAPA, SALVATORE

<120> METHODS AND COMPOSITIONS FOR MODULATING APOPTOSIS

<130> 21459-94575

<140> 10/626,905
<141> 2003-07-25

<150> PCT/US02/31548
<151> 2002-10-02

<150> 10/263,330
<151> 2002-10-02

<150> 60/328,811
<151> 2001-10-12

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<151> 2001-10-02

<160> 53

<170> PatentIn Ver. 3.2

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<213> Homo sapiens

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<210> 2

<211> 161

<212> PRT

<213> Homo sapiens

<400> 2

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20							25								

Gln	Asp	Arg	Leu	Thr	Val	Gly	Val	Tyr	Glu	Ser	Ala	Lys	Leu	Met	Asn
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35							40								

Val	Asp	Pro	Asp	Ser	Val	Val	Leu	Cys	Leu	Leu	Ala	Ile	Asp	Glu	Glu
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50							55								

Glu	Glu	Asp	Asp	Ile	Ala	Leu	Gln	Ile	His	Phe	Thr	Leu	Ile	Gln	Ser
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65							70								

Phe	Cys	Cys	Asp	Asn	Asp	Ile	Asn	Ile	Val	Arg	Val	Ser	Gly	Asn	Ala
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85									90						

Arg	Leu	Ala	Gln	Leu	Leu	Gly	Glu	Pro	Ala	Glu	Thr	Gln	Gly	Thr	Thr
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100							105								

Glu	Ala	Arg	Asp	Leu	His	Cys	Leu	Pro	Phe	Leu	Gln	Asn	Pro	His	Thr
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115							120								

Asp	Ala	Trp	Lys	Ser	His	Gly	Leu	Val	Glu	Val	Ala	Ser	Tyr	Cys	Glu
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130							135								

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<212> DNA

<213> Mus musculus

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 <213> Mus musculus

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 Gln Asp Arg Leu Thr Val Gly Val Tyr Glu Ala Ala Lys Leu Met Asn
 35 40 45
 Val Asp Pro Asp Ser Val Val Leu Cys Leu Leu Ala Ile Asp Glu Glu
 50 55 60
 Glu Glu Asp Asp Ile Ala Leu Gln Ile His Phe Thr Leu Ile Gln Ser
 65 70 75 80
 Phe Cys Cys Asp Asn Asp Ile Asp Ile Val Arg Val Ser Gly Met Gln
 85 90 95
 Arg Leu Ala Gln Leu Leu Gly Glu Pro Ala Glu Thr Leu Gly Thr Thr
 100 105 110
 Glu Ala Arg Asp Leu His Cys Leu Leu Val Thr Asn Cys His Thr Asp
 115 120 125
 Ser Trp Lys Ser Gln Gly Leu Val Glu Val Ala Ser Tyr Cys Glu Glu
 130 135 140
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 <211> 1355
 <212> DNA
 <213> Homo sapiens

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 <213> Mus musculus

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Gln	Arg	Thr	Ile	Thr	Val	Gly	Val	Tyr	Glu	Ala	Ala	Lys	Leu	Leu	Asn
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Val	Asp	Pro	Asp	Asn	Val	Val	Leu	Cys	Leu	Leu	Ala	Ala	Asp	Glu	Asp
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Asp	Asp	Arg	Asp	Val	Ala	Leu	Gln	Ile	His	Phe	Thr	Leu	Ile	Gln	Ala
					65		70			75				80	

Phe	Cys	Cys	Glu	Asn	Asp	Ile	Asn	Ile	Leu	Arg	Val	Ser	Asn	Pro	Gly
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Arg	Leu	Ala	Glu	Leu	Leu	Leu	Glu	Thr	Asp	Ala	Gly	Pro	Ala	Ala	
					100			105					110		

Ser	Glu	Gly	Ala	Glu	Gln	Pro	Pro	Asp	Leu	His	Cys	Val	Leu	Val	Thr
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Asn	Pro	His	Ser	Ser	Gln	Trp	Lys	Asp	Pro	Ala	Leu	Ser	Gln	Leu	Ile
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Cys	Phe	Cys	Arg	Glu	Ser	Arg	Tyr	Met	Asp	Gln	Trp	Val	Pro	Val	Ile
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Asn Leu Pro Glu Arg
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<212> PRT
<213> Mus musculus

<400> 8
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20 25 30

Gln Arg Thr Ile Thr Val Gly Val Tyr Glu Ala Ala Lys Leu Leu Asn
35 40 45

Val Asp Pro Asp Asn Val Val Leu Cys Leu Leu Ala Ala Asp Glu Asp
50 55 60

Asp Asp Arg Asp Val Ala Leu Gln Ile His Phe Thr Leu Ile Arg Ala
65 70 75 80

Phe Cys Cys Glu Asn Asp Ile Asn Ile Leu Arg Val Ser Asn Pro Gly
85 90 95

Arg Leu Ala Glu Leu Leu Leu Glu Asn Asp Ala Gly Pro Ala Glu
 100 105 110

Ser Gly Gly Ala Ala Gln Thr Pro Asp Leu His Cys Val Leu Val Thr
 115 120 125

Asn Pro His Ser Ser Gln Trp Lys Asp Pro Ala Leu Ser Gln Leu Ile
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Cys Phe Cys Arg Glu Ser Arg Tyr Met Asp Gln Trp Val Pro Val Ile
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Asn Leu Pro Glu Arg
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<210> 9
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<212> DNA
<213> Homo sapiens

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<210> 10
<211> 159
<212> PRT
<213> Homo sapiens

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 20 25 30

Ala Gln Arg Gln Gly Cys Leu Thr Ala Gly Val Tyr Glu Ser Ala Lys
 35 40 45

Val Leu Asn Val Asp Pro Asp Asn Val Thr Phe Cys Val Leu Ala Ala
 50 55 60

Gly Glu Glu Asp Glu Gly Asp Ile Ala Leu Gln Ile His Phe Thr Leu
 65 70 75 80

Ile Gln Ala Phe Cys Cys Glu Asn Asp Ile Asp Ile Val Arg Val Gly
 85 90 95

Asp Val Gln Arg Leu Ala Ala Ile Val Gly Ala Gly Glu Ala Gly
 100 105 110

Ala Pro Gly Asp Leu His Cys Ile Leu Ile Ser Asn Pro Asn Glu Asp
 115 120 125

Ala Trp Lys Asp Pro Ala Leu Glu Lys Leu Ser Leu Phe Cys Glu Glu
 130 135 140

Ser Arg Ser Val Asn Asp Trp Val Pro Ser Ile Thr Leu Pro Glu
 145 150 155

<210> 11

<211> 1084

<212> DNA

<213> Mus musculus

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<210> 12

<211> 159

<212> PRT

<213> Mus musculus

<400> 12

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Ala His Gly Gln Gly Cys Leu Thr Ala Gly Val Tyr Glu Ser Ala Lys
 35 40 45

Val Leu Asn Val Asp Pro Asp Asn Val Thr Phe Cys Val Leu Ala Ala
 50 55 60

Asp Glu Glu Asp Glu Gly Asp Ile Ala Leu Gln Ile His Phe Thr Leu
 65 70 75 80

Ile Gln Ala Phe Cys Cys Glu Asn Asp Ile Asp Ile Val Arg Val Gly
 85 90 95

Asp Val Gln Arg Leu Ala Ala Ile Val Gly Ala Asp Glu Glu Gly Gly
 100 105 110

Ala Pro Gly Asp Leu His Cys Ile Leu Ile Ser Asn Pro Asn Glu Asp
 115 120 125

Thr Trp Lys Asp Pro Ala Leu Glu Lys Leu Ser Leu Phe Cys Glu Glu
 130 135 140

Ser Arg Ser Phe Asn Asp Trp Val Pro Ser Ile Thr Leu Pro Glu
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<210> 13
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

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<210> 14
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 <213> Artificial Sequence

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 <223> Description of Artificial Sequence: Primer

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<210> 15
 <211> 22
 <212> DNA
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<220>
<223> Description of Artificial Sequence: Primer

<400> 15
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<210> 16
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<223> Description of Artificial Sequence: Primer

<400> 16
ggataacgcg tcaccgtctt caaacttacc aaacgttta 39

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<223> Description of Artificial Sequence: Primer

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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 20
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<210> 21
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<213> Artificial Sequence

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<210> 22
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<220>
<223> Description of Artificial Sequence: Primer

<400> 22
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<210> 23
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 23
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<210> 24
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

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11

<210> 25
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 25
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39

<210> 26
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<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer

<400> 26
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12

<210> 27
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<220>
<223> Description of Artificial Sequence: Primer

<400> 27
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12

<210> 28
<211> 10
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer

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ggggattcca

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<210> 29
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 29
atcgattcca

10

<210> 30
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 30
ggaaaaccccg 10

<210> 31
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 31
ggaaaatattg 10

<210> 32
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 32
gatctctagg gactctccgg ggacagcgag gggattccag acc 43

<210> 33
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 33
gatctgaatt cgctggaaac cccgcac 27

<210> 34
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 34

gatctgaatt ctacttactc tcaagac

27

<210> 36
<211> 10
<212> DNA
<213> Mus musculus

<400> 36
gggactctcc

10

<210> 37
<211> 16
<212> DNA
<213> Mus musculus

<400> 37
ctagggactc tccggg

16

<210> 38
<211> 10
<212> DNA
<213> Mus musculus

<400> 38
ggggattcca

10

<210> 39
<211> 16
<212> DNA
<213> Mus musculus

<400> 39
cgaggggatt ccagac

16

<210> 40
<211> 10
<212> DNA
<213> Mus musculus

<400> 40
ggaaaccccg

10

<210> 41
<211> 16
<212> DNA
<213> Mus musculus

<400> 41
gctggaaacc ccgcgc

16

<210> 42
<211> 4
<212> PRT
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 42
Asp Val Ala Asp
  1

<210> 43
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 43
Asp Glu Val Asp
  1

<210> 44
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 44
Val Glu Ile Asp
  1

<210> 45
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      peptide

<400> 45
Ile Glu Thr Asp
  1

<210> 46
<211> 4
<212> PRT
<213> Artificial Sequence
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<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 46
 Leu Glu His Asp
 1

<210> 47
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 47
 cgccaccatg gagatggta acaccat

27

<210> 48
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 48
 gtacaagggt atggctatgt caatggagg tag

33

<210> 49
 <211> 1392
 <212> DNA
 <213> Homo sapiens

<400> 49
 aattcggcac gaggtgtttg tctgccggac tgacgggcgg ccgggcggcg cgcggcggcg 60
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 aagctgaagc aggagaaccg ggaggcccg cgaggatcg acctaacctt ggatatcagc 180
 ccccaagccgc ccaggcccac cctgcagtc cccgtggcca acgatgggg cagccgctcg 240
 ccatacctcag agagctcccc gcagcacccc acggccccc cccggccccc ccacatgctg 300
 gggctcccgta caaccctgtt cacaccccgc agcatggaga gcattgagat tgaccacaag 360
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 gaaaatcaacg acctggagaa cttggccggat atggccagcg gcacactgcgg accggtgtgg 480
 aagatgcgtc tccggaaagac cggccacgtc attggcgta agcaaattcg cgcgtccggg 540
 aacaaggagg agaacaagcg catcctcatg gacctggatg tggtgctgaa gagccacgac 600
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 aagccggact atgacatccg ggccgacgta tggagcctgg gcatctcggtt ggtggagctg 1020

gcaacaggac agttcccta caagaactgc aagacggact ttgaggtcct caccaaagt 1080
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 ttcgtcaaag actgccttac taaagatcac aggaagagac caaagtataa taagctactt 1200
 gaacacagct tcataagcg ctacgagacg ctggaggtgg acgtggcgct ctgggtcaag 1260
 gatgtcatgg cgaagacctg agtcaccgcg gactaacggc gttccttgag ccagccccac 1320
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 ggcattggcc cc 1392

<210> 50
 <211> 401
 <212> PRT
 <213> Homo sapiens

<400> 50
 Met Ala Ala Ser Ser Leu Glu Gln Lys Leu Ser Arg Leu Glu Ala Lys
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Leu Lys Gln Glu Asn Arg Glu Ala Arg Arg Arg Ile Asp Leu Asn Leu
 20 25 30

Asp Ile Ser Pro Gln Arg Pro Arg Pro Thr Leu Gln Leu Pro Leu Ala
 35 40 45

Asn Asp Gly Gly Ser Arg Ser Pro Ser Ser Glu Ser Ser Pro Gln His
 50 55 60

Pro Thr Pro Pro Ala Arg Pro Arg His Met Leu Gly Leu Pro Ser Thr
 65 70 75 80

Leu Phe Thr Pro Arg Ser Met Glu Ser Ile Glu Ile Asp His Lys Leu
 85 90 95

Gln Glu Ile Met Lys Gln Thr Gly Tyr Leu Thr Ile Gly Gly Gln Arg
 100 105 110

Tyr Gln Ala Glu Ile Asn Asp Leu Glu Asn Leu Gly Glu Met Gly Ser
 115 120 125

Gly Thr Cys Gly Pro Val Trp Lys Met Arg Phe Arg Lys Thr Gly His
 130 135 140

Val Ile Ala Val Lys Gln Met Arg Arg Ser Gly Asn Lys Glu Glu Asn
 145 150 155 160

Lys Arg Ile Leu Met Asp Leu Asp Val Val Leu Lys Ser His Asp Cys
 165 170 175

Pro Tyr Ile Val Gln Cys Phe Gly Thr Phe Ile Thr Asn Thr Asp Val
 180 185 190

Phe Ile Ala Met Glu Leu Met Gly Thr Cys Ala Glu Lys Leu Lys Lys
 195 200 205

Arg Met Gln Gly Pro Ile Pro Glu Arg Ile Leu Gly Lys Met Thr Val
 210 215 220

Ala Ile Val Lys Ala Leu Tyr Tyr Leu Lys Glu Lys His Gly Val Ile
 225 230 235 240

 His Arg Asp Val Lys Pro Ser Asn Ile Leu Leu Asp Glu Arg Gly Gln
 245 250 255

 Ile Lys Leu Cys Asp Phe Gly Ile Ser Gly Arg Leu Val Asp Ser Lys
 260 265 270

 Ala Lys Thr Arg Ser Ala Gly Cys Ala Ala Tyr Met Ala Pro Glu Arg
 275 280 285

 Ile Asp Pro Pro Asp Pro Thr Lys Pro Asp Tyr Asp Ile Arg Ala Asp
 290 295 300

 Val Trp Ser Leu Gly Ile Ser Leu Val Glu Leu Ala Thr Gly Gln Phe
 305 310 315 320

 Pro Tyr Lys Asn Cys Lys Thr Asp Phe Glu Val Leu Thr Lys Val Leu
 325 330 335

 Gln Glu Glu Pro Pro Leu Leu Pro Gly His Met Gly Phe Ser Gly Asp
 340 345 350

 Phe Gln Ser Phe Val Lys Asp Cys Leu Thr Lys Asp His Arg Lys Arg
 355 360 365

 Pro Lys Tyr Asn Lys Leu Leu Glu His Ser Phe Ile Lys Arg Tyr Glu
 370 375 380

 Thr Leu Glu Val Asp Val Ala Ser Trp Phe Lys Asp Val Met Ala Lys
 385 390 395 400

Thr

<210> 51
 <211> 2313
 <212> DNA
 <213> Mus musculus

<400> 51
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 caaccttttt cacaccgcgc agtatggaga gcatcgagat tgaccagaag ctgcaggaga 300
 tcatgaagca gacagggtac ctgactatcg ggggccagcg ttatcaggca gaaatcaatg 360
 acttggagaa cttgggttag atgggcagtg gtacacctgtgg tcaggtgtgg aagatgcgg 420
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 atgacatccg agctgtatgttggagcctgg gcatctact ggtggagctg gcaacaggac 960

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caacaacaac	aacaacaaca	acaag	tctggtagc	ttact	ccat	cttccctcag	1860
ctcttgagta	tcgtttctg	gggggttcc	tcgagg	ttggacggat	tttccc	cagc	1920
atcgtttaact	gcacttacta	tgcactgaca	taatatgcac	cacat	ttt	ttt	1980
tacacattt	tctaaaatt	tgccacagct	gaaacaaagg	gtatattaa	ggtataacgt	2040	
caaagctgt	accaagctt	ctcactggc	tgtggggct	tcagccgtg	cttggaa	tttac	2100
tatcaactgg	aggaaactgt	tcaagtgttc	tgttttagacc	acactggaca	aaaaacagat	2160	
acctatgggg	tgaggttct	attctca	gggtttgtt	ttttttttt	ttt	ttt	2220
tttcagtgca	aatttagagac	agttcatgtt	ttcttgca	ttttttttt	ttt	ttt	2280
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<210> 52
<211> 346
<212> PRT
<213> *Mus musculus*

<400> 52

Met Leu Gly Leu Pro Ser Thr Leu Phe Thr Pro Arg Ser Met Glu Ser
1 5 10 15

Ile Glu Ile Asp Gln Lys Leu Gln Glu Ile Met Lys Gln Thr Gly Tyr
20 25 30

Leu Thr Ile Gly Gly Gln Arg Tyr Gln Ala Glu Ile Asn Asp Leu Glu
35 40 45

Asn Leu Gly Glu Met Gly Ser Gly Thr Cys Gly Gln Val Trp Lys Met
50 55 60

Arg Phe Arg Lys Thr Gly His Ile Ile Ala Val Lys Gln Met Arg Arg
65 70 75 80

Ser Gly Asn Lys Glu Glu Asn Lys Arg Ile Leu Met Asp Leu Asp Val
85 90 95

Val Leu Lys Ser His Asp Cys Pro Tyr Ile Val Gln Cys Phe Gly Thr
 100 105 110

Phe Ile Thr Asn Thr Asp Val Phe Ile Ala Met Glu Leu Met Gly Ile
115 120 125

Cys Ala Glu Lys Leu Lys Lys Arg Met Gln Gly Pro Ile Pro Glu Arg
130 135 140

Ile Leu Gly Lys Met Thr Val Ala Ile Val Lys Ala Leu Tyr Tyr Leu
 145 150 155 160

Lys Glu Lys His Gly Val Ile His Arg Asp Val Lys Pro Ser Asn Ile
 165 170 175

Leu Leu Asp Glu Arg Gly Gln Ile Lys Leu Cys Asp Phe Gly Ile Ser
 180 185 190

Gly Arg Leu Val Asp Ser Lys Ala Lys Thr Arg Ser Ala Gly Cys Ala
 195 200 205

Ala Tyr Met Ala Pro Glu Arg Ile Asp Pro Pro Asp Pro Thr Lys Pro
 210 215 220

Asp Tyr Asp Ile Arg Ala Asp Val Trp Ser Leu Gly Ile Ser Leu Val
 225 230 235 240

Glu Leu Ala Thr Gly Gln Phe Pro Tyr Lys Asn Cys Lys Thr Asp Phe
 245 250 255

Glu Val Leu Thr Lys Val Leu Gln Glu Glu Pro Pro Leu Leu Pro Gly
 260 265 270

His Met Gly Phe Ser Gly Asp Phe Gln Ser Phe Val Lys Asp Cys Leu
 275 280 285

Thr Lys Asp His Arg Lys Arg Pro Lys Tyr Asn Lys Leu Leu Glu His
 290 295 300

Ser Phe Ile Lys His Tyr Glu Ile Leu Glu Val Asp Val Ala Ser Trp
 305 310 315 320

Phe Lys Asp Val Met Ala Lys Thr Asp Ser Pro Arg Thr Ser Gly Val
 325 330 335

Leu Ser Gln His His Leu Pro Phe Phe Arg
 340 345

<210> 53

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
6X-His tag

<400> 53

His His His His His His

1

5